

Exhibit “Z”

CRITICAL AREAS REPORT

GUNSHY MANOR BOUNDARY LINE ADJUSTMENT KING COUNTY, WASHINGTON

Prepared For:

THE ESTATE OF BARBARA J. NELSON.
Redmond, Washington

Prepared By:

TALASAEA CONSULTANTS, INC.
Woodinville, Washington

5 July 2012

Critical Areas Report

Gunshy Manor Boundary Line Adjustment
King County, Washington

Prepared for:

The Estate of Barbara J. Nelson
16508 NE 79th Street
Redmond, Washington 98072

Prepared by:

Talasaea Consultants, Inc.
15020 Bear Creek Road NE
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425-861-7550

5 July 2012

Executive Summary

REPORT TYPE: Critical Areas Report

REPORT NAME: Gunshy Manor Boundary Line Adjustment

PROPERTY LOCATION: The Site is an assemblage of five parcels located south of NE Union Hill Road, approximately 1,300 feet east of the intersection of 196th Avenue NE and NE Union Hill Road in King County, Washington. The King County tax parcel numbers included in the assemblage are 0825069013, 0825069055, 0825069012, 0825069029, and 0825069102. The Public Land Survey System location is the NW ¼ of Section 8, T25N, R6E, Willamette Meridian.

PROJECT STAFF: Bill Shiels, Principal; David R. Teesdale, Senior Wetland Ecologist

CLIENT: The Estate of Barbara J. Nelson.

FIELD SURVEY: Field survey was performed on 18 May 2012

SITE LOCATION: The site location (Site) is an irregularly-shaped, approximately 66-acre portion off the approximately 124-acre assemblage. The Site is located in the central portion of the eastern half of the assemblage.

DETERMINATION: One wetland, two fish-bearing ditches, and two streams were identified on the subject property. The ditches were named Ditch 1 and Ditch 2. The streams were named Stream 1 and Stream 2. The wetland was named Wetland A. Wetland A is associated with Ditch 2. Stream 1 flows directly to Evans Creek. Ditch 1, 2, and Stream 2 eventually coningle and flow into Evans Creek.

The wetland was determined to be a King County Category IV wetland with a 50-ft standard buffer measured from the delineated wetland edge. Stream 1 and Ditches 1 and 2 were determined to be King County Type F waters. Type F waters have a 165-ft standard buffer measured landward from the ordinary high water mark.

PROPOSED PROJECT: The Client proposes a boundary line adjustment for the Gunshy Manor property to move three building lots away from known critical areas and consolidate them in an appropriate location more suitable for future development. The proposed lots will be sized in conformance with current zoning requirements for the Gunshy Manor area. These lots have been laid out so that all critical areas and associated buffers will be protected. There will be no impacts to critical areas resulting from the proposed boundary line adjustments.

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CHAPTER 1. INTRODUCTION

This report is the result of a critical areas study of the Gunshy Manor property (referred to hereinafter as the Project or Site). The Site is the location of a proposed boundary line change to modify the boundaries for three residential building lots on approximately 66 acres of land of an approximately 124 acre assemblage (Property). The building lots are further defined with specific building areas are between approximately 3.0 acres and 4.9 acres in size. These building areas are situated within its associated lot so that the building areas are free from all critical areas and associated buffers. The purpose of this report is to describe existing site conditions, including critical areas (wetlands, streams, water bodies, etc.) on or adjacent to the Site and provide a regulatory review of King County Critical Areas Code (§21A.24) for site planning purposes.

CHAPTER 2. PROJECT OVERVIEW

This chapter describes the key elements of the proposed project.

2.1 Project Location

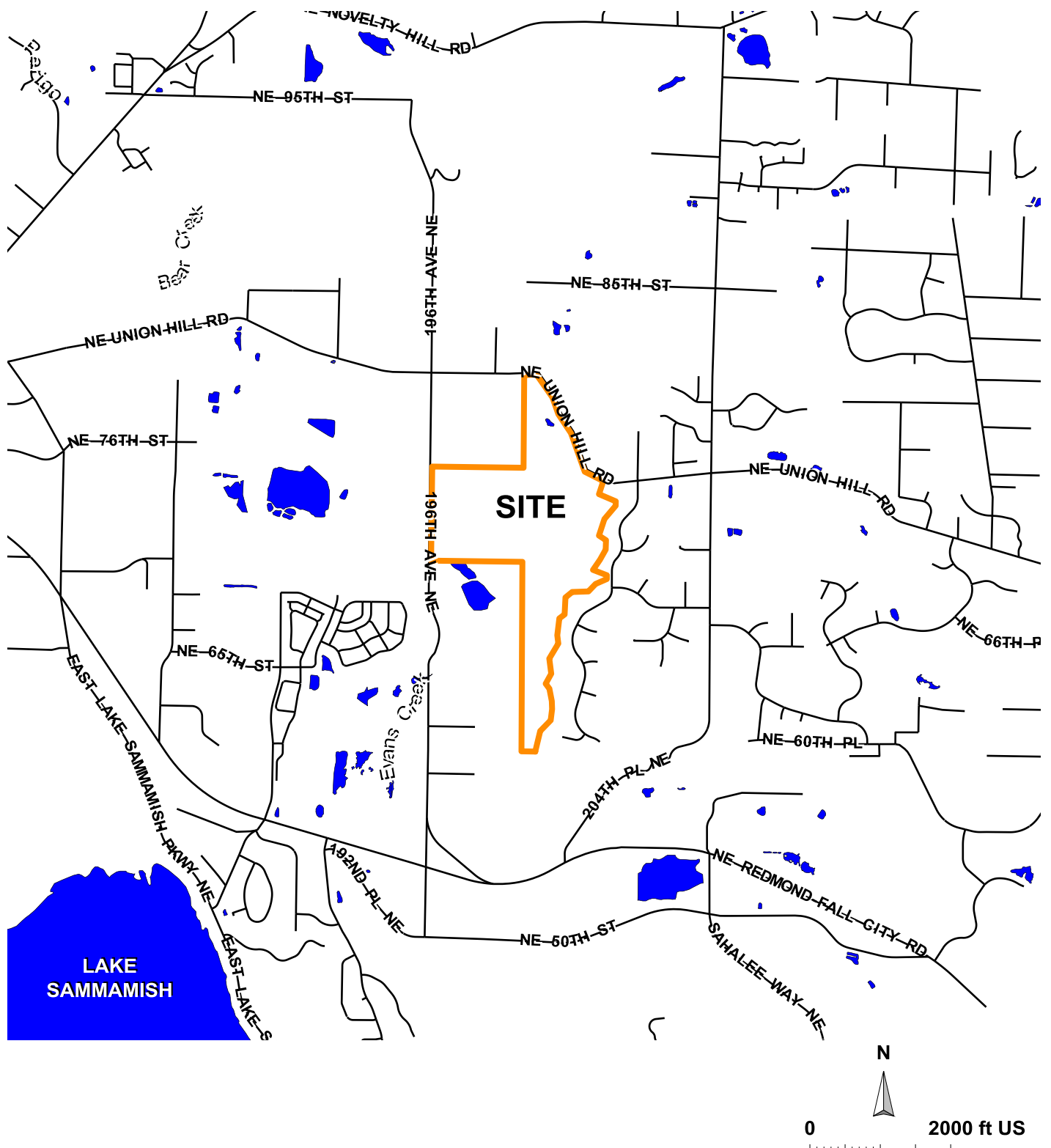
The Property is located east of 196th Avenue NE (The Old Brick Road) and south of NE Union Hill Road in King County, Washington (**Figure 1**). The King County tax parcel numbers for the Property are 0825069013, 0825069055, 0825069012, 0825069029, and 0825069102. The Public Land Survey System location is the NW ¼ of Section 8, T25N, R6E, Willamette Meridian. The Site is located in the central portion of the eastern half of the Property.

2.2 Proposed Project

The Client proposes a boundary line adjustment for the Gunshy Manor property in order to move the building areas of three lots away from known critical areas (wetlands, streams, and steep slopes) and consolidate them in an appropriate location that is more suitable for future development. The lots involved in the boundary line adjustment are named Lot 2, 3, and 5. Additional lots are included in the Gunshy Manor project, however, Lots 1 and 4 are currently developed with existing single-family homes and associated out buildings and do not need to be considered in this Critical Areas Report. Lot 3 (approximately 15.2 acres) is the northernmost lot, Lot 2 (approximately 12.4 acres) is to the south of Lot 3, and Lot 5 (approximately 39.3 acres) is to the south of Lot 2. The building areas for the lots are contained on **Table 1** below and illustrated on **Figure 2**.

Table 1. Lot and Building Area Acreage.

Lot Number	Lot Size (acres)	Building Area Size (acres)
Lot 2	12.4	4.9
Lot 3	15.2	3.8
Lot 5	39.3	3.0



Reference: GIS road, stream, and waterbody data from King County GIS, 2006.



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FIGURE 1

VICINITY MAP
GUNSHY MANOR
BOUNDARY LINE ADJUSTMENT
KING COUNTY, WASHINGTON

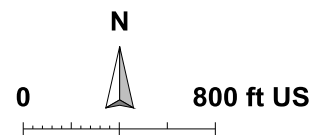
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2.3 Existing Site Conditions

Gunshy Manor is an irregularly shaped assemblage of parcels totalling approximately 124 acres in size (**Figure 2**). It is located east of the Redmond City limits, south of NE Union Hill Road. Portions of the property in the north and west ends are developed as residential. The center of the property is used for livestock and hay. The remainder of the property is undeveloped and generally forested.

The topography of the western and central portions of the property are generally flat to slightly rolling. The eastern portion is characterized by moderate to steep slopes.

There are two points of access to the property. One access point to the property is by a shared driveway off of NE Union Hill Road. This driveway connects to a gravel road that provides access to the remainder of the Gunshy Manor property. The second access point is off of 196th Avenue NE.

CHAPTER 3. METHODOLOGY

The critical areas analysis of the Site involved a two-part effort. The first part consisted of a preliminary assessment of the Site and the immediate surrounding area using published environmental information. This information included:

- 1) Wetland and soils information from resource agencies;
- 2) Environmentally Critical Areas Map information from King County;
- 3) GIS analysis of ortho-photography and LIDAR data; and,
- 4) Relevant studies completed or ongoing in the vicinity of the site supplied to us by the Client (if any).

The second part consisted of a site investigation where direct observations and measurements of existing environmental conditions were made. Observations included plant communities, soils, hydrology, and stream conditions. This information was used to help characterize onsite wetlands and define the limits of the Ordinary High Water Mark (OHWM) of streams and fish-bearing ditches for regulatory purposes (See **Section 3.2 – Field Investigation** below).

3.1 Background Data Reviewed

Background information from the following sources was reviewed prior to field investigations:

- U.S. Fish and Wildlife National Wetlands Inventory for the Redmond Quadrangle;
- Natural Resources Conservation Service Soil Survey for the King County Area;
- King County GIS database;
- StreamNet and SalmonScape databases,
- Orthophotography from NAIP and Google Earth

- LIDAR terrain data from Puget Sound LIDAR Consortium

3.2 Field Investigation

The Site was evaluated by Talasaea Consultants, Inc. on 18 May 2012. The existing site conditions were recorded, including relevant information concerning onsite and offsite wetlands and streams. The OHWM for onsite streams and fish-bearing ditches were located and flagged in the field and surveyed using a mapping-grade GPS receiver (TopCon GMS2). OHWM was delineated using the methodology described in *Determining the Ordinary High Water Mark on Streams in Washington State* (Olson and Stockdale 2008).

Plant species were identified according to the taxonomy of Hitchcock and Cronquist (Hitchcock, *et al.* 1969). Plant wetland status was assigned according to the list of plant species that occur in wetlands for Region 9, published by the U.S. Fish and Wildlife Service (P. B. Reed 1998). Stream and wetland classifications were determined using King County Critical Areas Code, §21A.24.

CHAPTER 4. RESULTS

4.1 Analysis of Existing Information

4.1.1 National Wetland Inventory

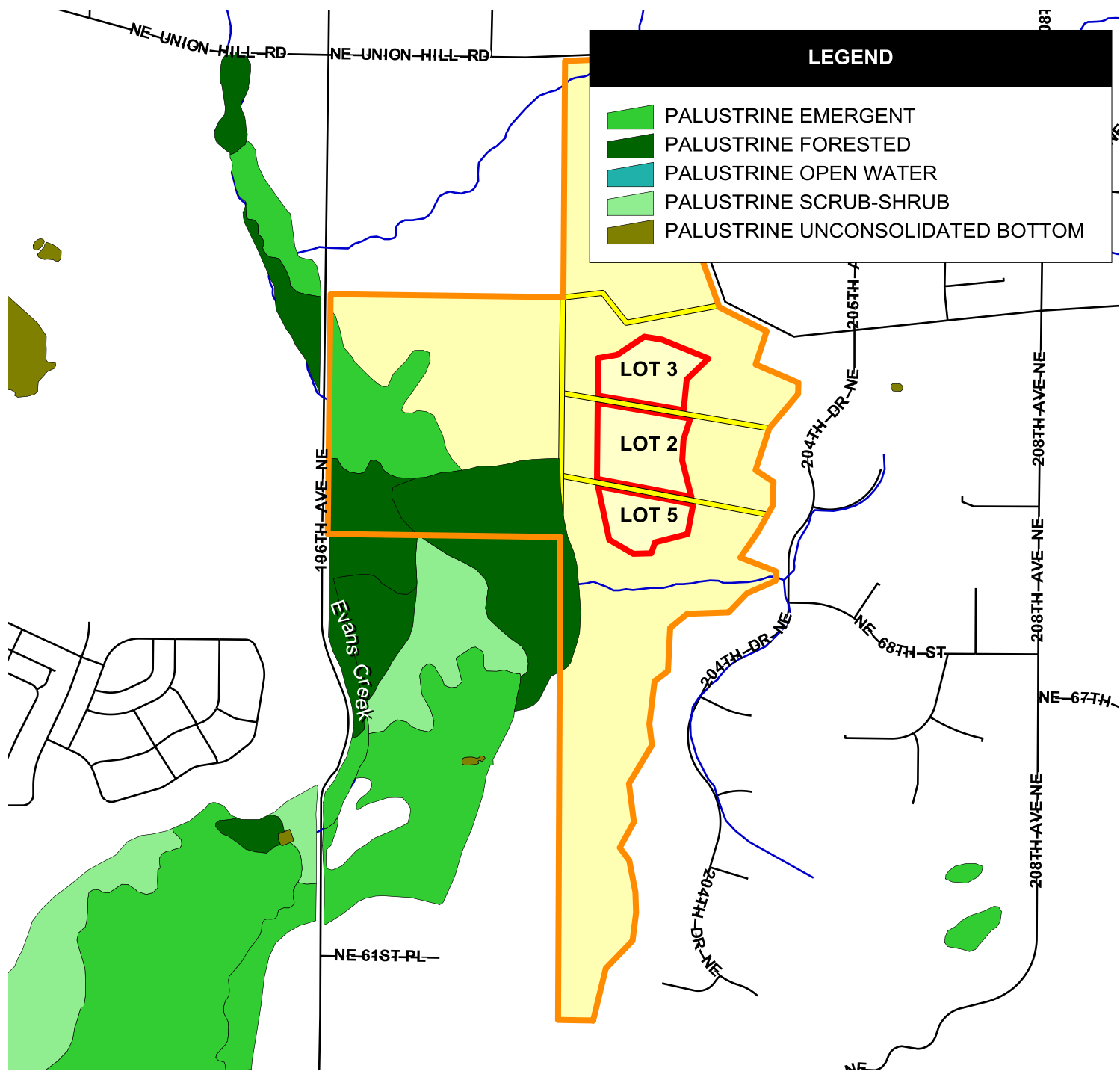
The National Wetland Inventory (NWI) map for the Redmond Quadrangle identifies several wetlands in the vicinity of the Site with two in direct proximity of the property boundaries (**Figure 3**). These wetlands are all associated with Evans Creek, which flows adjacent to the west property boundary of the Site. The NWI identifies one palustrine forested wetland that is temporarily flooded (PFOA) along the southwest corner of the Project site and one palustrine emergent wetland that is temporarily flooded (PEMA) west of the Project. It should be noted that the National Wetland Inventory Map for the Redmond Quadrangle was created in 1981 through interpretation of colorized infrared aerial photographic images taken in 1973, 1980, and 1981. Conditions seen on the subject property may not be reflected on the NWI map due to natural changes in hydrology and land-use practices.

4.1.2 Natural Resources Conservation Service

The National Resources Conservation Service Soil Survey for King County Area indicates four soil types on the Project site (**Figure 4**). These soils are Alderwood-Kitsap soil, Everett gravelly sandy loam, Norma loam, and Seattle muck.

The Alderwood-Kitsap soil is a soil generally found on very steep slopes. It is comprised of approximately 50-percent Alderwood gravelly sandy loam, approximately 25-percent Kitsap silt loam, with the remainder consisting of various associated soil types. Slopes within this soil type unit can range from 25-percent to 70-percent.

Everett gravelly sandy loam is a nearly level to undulating, somewhat excessively drained soil. It formed in gravelly glacial outwash under conifers. The surface is



Reference: GIS road and stream data from King County GIS, 2006.
NWI Redmond GIS data from USFWS, downloaded 2011.



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FIGURE 3

NWI MAP - REDMOND QUADRANGLE
GUNSHY MANOR
BOUNDARY LINE ADJUSTMENT
KING COUNTY, WASHINGTON

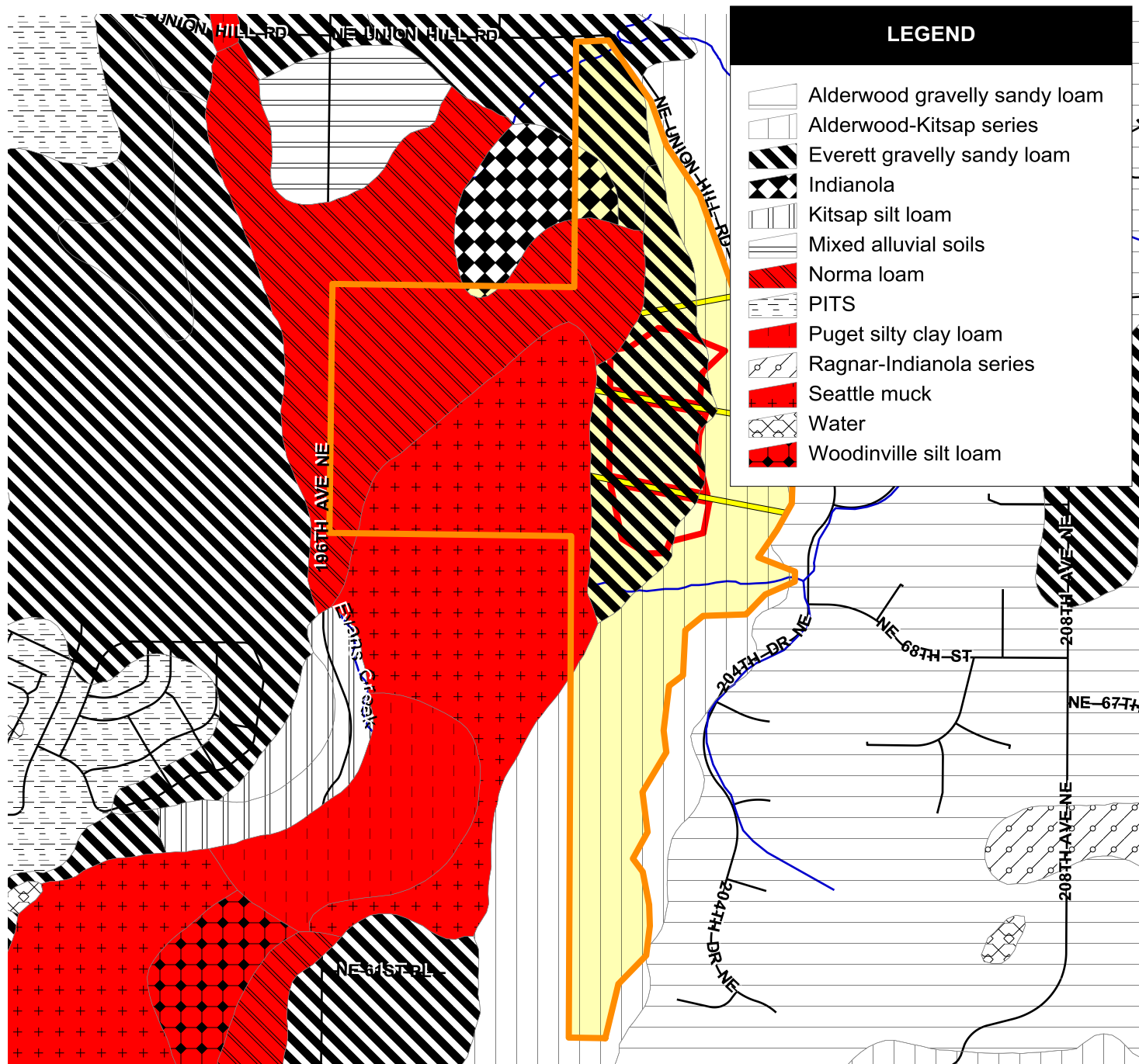
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Reference: GIS road data from King County GIS, 2006. Soil map data from NRCS, downloaded 2012.



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FIGURE 4

NRCS SOILS MAP FOR KING COUNTY AREA
GUNSHY MANOR
BOUNDARY LINE ADJUSTMENT
KING COUNTY, WASHINGTON

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typically very dark brown gravelly sandy loam. The subsoil is dark yellowish-brown gravelly sandy loam.

Norma loam is a very deep, poorly drained soil in depressional areas of outwash plains and till plains. It is formed in alluvium. Typically the surface area is very dark gray loam to about 10 inches. The subsoil is dark grayish brown sandy loam to about 18 inches. The substratum is dark gray sandy loam to about 60 inches.

Seattle muck is made up of very poorly drained organic soils that formed in materials derived primarily from sedges. These soils are found in depressions and valleys on the glacial till plains and in river and stream valleys. The representative profile is a surface layer (approximately 11 inches) of black muck underlain by dark reddish-brown, black, very dark brown, and dark brown muck and peaty muck extending to 60-inches or more.

The Alderwood-Kitsap and Everett soil series are not considered hydric by the National Technical Committee on Hydric Soils (NTCHS). Norma Loam and Seattle Muck are considered Hydric by the NTCHS.¹

4.1.3 King County Critical Areas Map

King County maps one large wetland adjacent to the Project site (**Figure 5**). This wetland is associated with Evans Creek. The wetland is on property owned by King County and is managed as a natural area (Evans Creek Natural Area). The Evans Creek Natural Area wetland is identified as a King County Category I wetland.

King County also maps two streams on or adjacent to the Project site. One stream is identified as Evans Creek, which is a King County Type F (fish-bearing) stream. Evans Creek generally flows adjacent to the western property boundary and is located approximately 1,275 feet west of the proposed boundary line adjustment. A second untyped stream flows from east to west along the southern boundary of the Site. This stream flows into the previously mentioned Evans Creek Natural Area wetland and drains into Evans Creek.

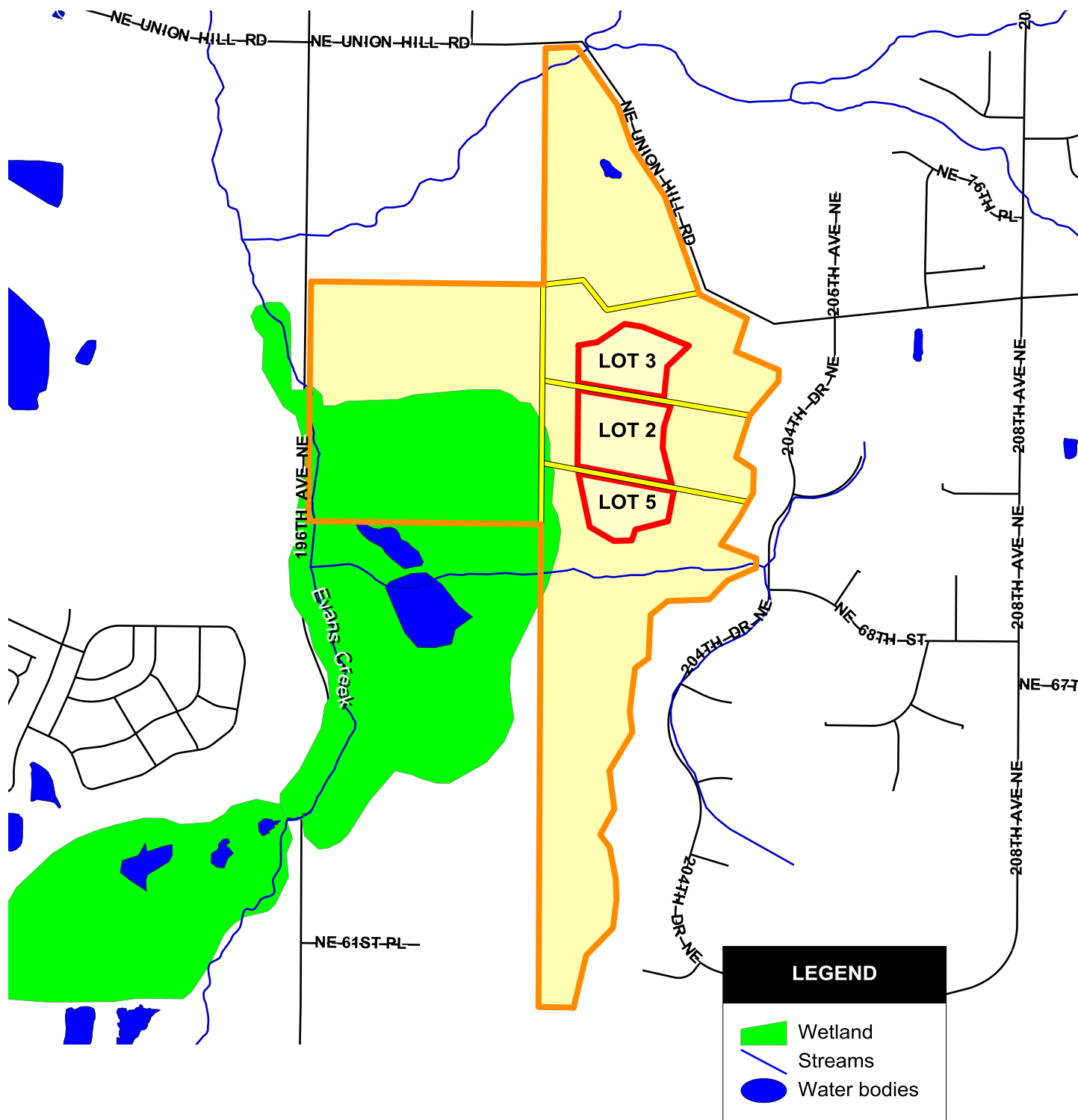
4.2 Analysis of Field Conditions

Five critical areas were identified, delineated, and mapped on or adjacent to the Site during our site evaluation (**Figure 6**). One natural stream (Stream 1), one stream that originates from drainage from a seep on a steep slope in the northeast portion of the property (Stream 2), two drainage ditches (Ditch 1 and Ditch 2), and one wetland (Wetland A) were identified.

4.2.1 Stream 1

Stream 1 has its headwaters in the steep slope area east of Lot 5. A stormwater facility for the residential development to the east of the Property (Gunshy Ridge) supplies some of the hydrology in this stream. A stormwater outfall structure from this stormwater facility is located south of the boundary for Lot 5. Stream 1 drains an area

¹ The Soil Survey for King County Area was published in 1973 and may not accurately reflect all onsite conditions due to land use practices.



Reference: GIS road, stream, wetland, and waterbody data from King County GIS, 2006.



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FIGURE 5

KING COUNTY CRITICAL AREAS MAP
GUNSHY MANOR
BOUNDARY LINE ADJUSTMENT
KING COUNTY, WASHINGTON

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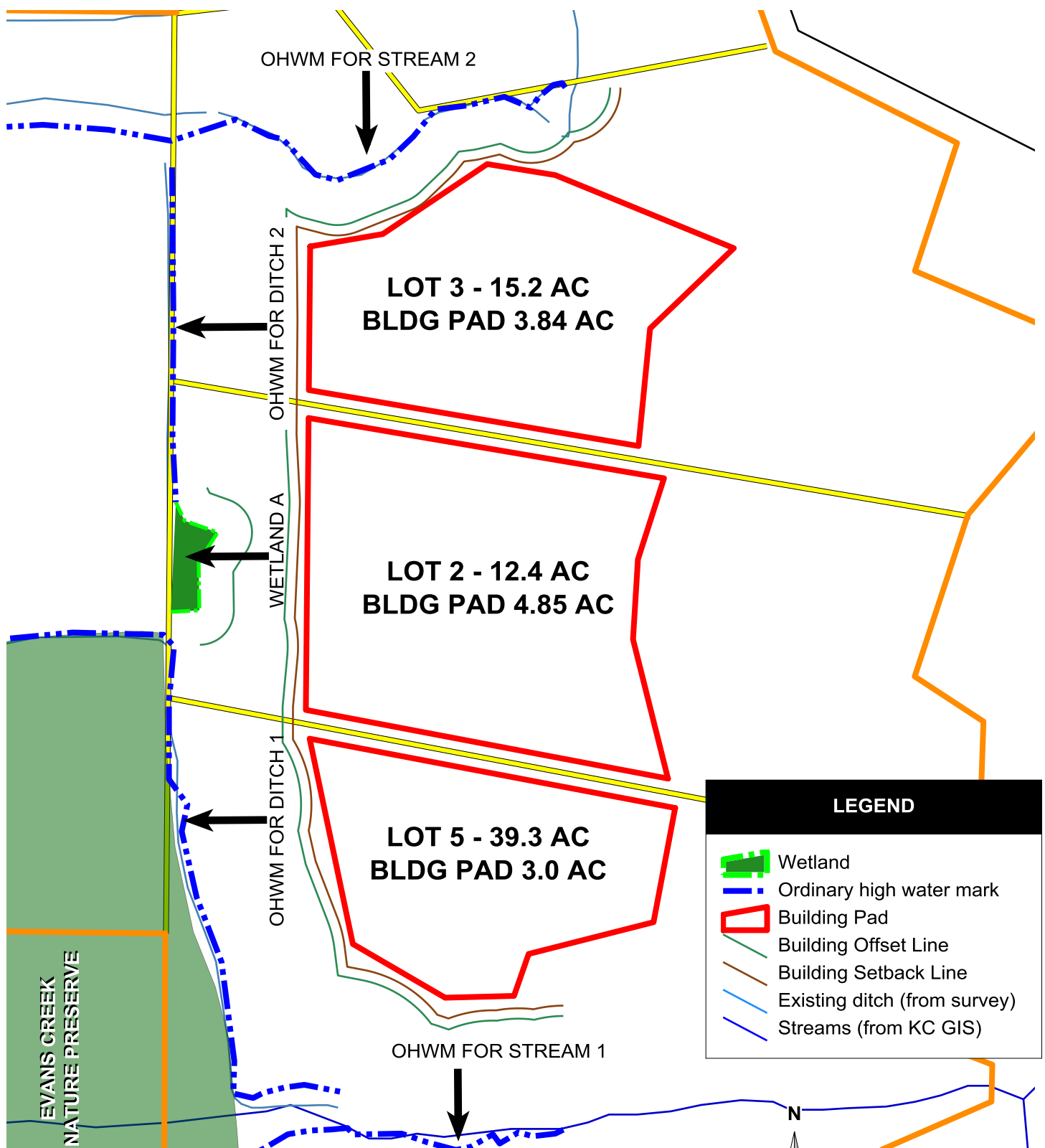
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Reference: GIS road, stream, wetland, and waterbody data from King County GIS, 2006. Ordinary high water mark and wetland limits mapped using a mapping-grade GPS.



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FIGURE 6

CRITICAL AREA LOCATION MAP
GUNSHY MANOR
BOUNDARY LINE ADJUSTMENT
KING COUNTY, WASHINGTON

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east of 208th Avenue NE between NE 712 Street and NE 63rd Street. It flows generally in a westerly direction to the Evans Creek Natural Area wetland, and eventually into Evans Creek.

The width of Stream 1 ranges between approximately 3- and 5-feet. The substrate consists mainly of gravel to coarse sand. The upper reach (offsite to the east of the subject property) of the streambank is well vegetated with native trees and shrubs. The lower reach on the subject property is maintained as a mowed grass pasture. Trees in the vicinity of Stream 1 provide an adequate degree of shading.

This stream is currently rated as a King County Type F stream. The standard buffer for a King County Type F stream is 165 feet measured landward from the ordinary high water mark (OHWM). The building setback on Lot 5 is approximately 200 feet north of the flagged OHWM for this stream.

4.2.2 Stream 2

Stream 2 originates from a spring on a steep slope, which is captured by a pair of cisterns. The spring and cistern supply domestic water, fire flow, and irrigation for the northern portion of the Property. Seepage from the spring and occasional overflow from the cisterns provides flow within the stream. Stream 2 flows generally in a westerly direction for approximately 670 feet where it connects with a drainage ditch. Water from the cisterns is^[1] diverted to an artificial pond located to the north. This pond drains towards a different stream (Martin Creek) located at the northern end of the Property near NE Union Hill Road (Martin Creek does not affect the proposed boundary line adjustments and is not a subject of this report).

Stream 2 flows through an artificially constructed channel dug through upland areas. The channel is steep sloped and up to five feet deep in parts. The wetted width of Stream 2 is generally between one foot and three feet. The streambed material consists mostly of sand and small gravel. A part of the stream bed in the middle reach of Stream 2 appeared to be flowing through a natural clay layer in the soil.

This stream is currently rated as a King County Type N stream with a 65-foot standard buffer measured landward from the OHWM. The building setback for Lot 3 is located approximately 90 feet away from the OHWM for Stream 2.

4.2.3 Ditch 1

Ditch 1 is an artificial drainage constructed along the south and west boundaries of the Site. A small portion of this ditch parallels the northside bank of Stream 1 for approximately 150 feet. No water was observed within this portion of the ditch for approximately 75 feet of its beginning. This ditch is not connected to, nor does it receive any water from Stream 1. The ditch turns north and extends for approximately 700 feet, then turns west away from the proposed building lots. The ditch eventually flows into Evans Creek approximately 1,415 feet from where it turns and flows west. The wetted width of the north-south portion of this ditch ranged between 10 and 15 feet.

^[1] Based on conversations with the land owner.

The substrate consisted of fine silts and muck. The bed is vegetated in parts with narrow-leafed bur-reed (*Sparangium angustifolium*) and pondweed (*Potamogeton natans*).

Ditch 1 is currently rated as a King County Type F water with a 165-foot standard buffer measured landward from the OHWM. There are no natural barriers to fish migration from Evans Creek, which is why it is rated as a Type F water. The building setbacks for Lots 2 and 5 are 200 feet away from the OHWM for Ditch 1.

4.2.4 Ditch 2

Ditch 2 is an artificial drainage extending along the west boundaries of Lots 2 and 3. The drainage starts on the north side of an existing gravel road north of where Ditch 1 turns from a northerly direction to a westerly direction (see **Figure 6**). There is no hydrologic connection between Ditch 1 and Ditch 2. Ditch 2 extends north for approximately 650 feet to a culvert under another existing gravel road. Stream 2 comingles with Ditch 2 on the north side of this culvert crossing. The ditch then flows generally in a westerly to southwesterly direction and eventually connects with Ditch 1 after approximately 1,200 feet.

Ditch 2 has no natural obstructions to fish passage along its entire length. Therefore, fish that enter Ditch 1 from Evans Creek could also utilize Ditch 2. It is currently rated as a King County Type F water with a 165-foot standard buffer measured landward from the OHWM. The building setbacks for Lots 2 and 3 are 200 feet away from the OHWM for Ditch 2.

4.2.5 Wetland A

Wetland A is a small, approximately 5,700 sf emergent wetland located on the east side of Ditch 2 (**Figure 6**). It is coincidental with the start of Ditch 2. It has a single plant community type (emergent). Species include field foxtail (*Alopecurus pratensis*), soft rush (*Juncus effusus*), creeping buttercup (*Ranunculus repens*), skunk cabbage (*Lysichiton americanum*), and celery-leafed buttercup (*R. sceleratus*). Soils within the wetland are sandy clay loams, generally black (10YR 2/1), and subtended at approximately 8 inches by a clay hardpan layer. Soils outside of the delineated wetland boundary are sandy clay loams, generally very dark brown (10YR 3/2) to approximately three inches and brown (10YR 5/3) with yellow mottles (10YR 7/8) from three inches to approximately 18 inches. Hydrology within the wetland appeared to be supported, for the most part, by shallow groundwater seepage.

We rated the wetland using the Washington State Wetland Rating System for Western Washington. Wetland A was determined to be a Category IV slope wetland. Category IV wetlands in King County have a 50-foot standard buffer measured landward from the delineated wetland edge. The wetland buffer is contained within the 165-foot Type F buffer for Ditch 2.

CHAPTER 5. PROJECT

The Client proposes a boundary line adjustment for the Gunshy Manor property to move three building lots away from known critical areas and consolidate them in an appropriate location that is more suitable for future development (**Figure 2**). Please refer to **Chapter 2.2.2** for a description of the project.

As previously stated, the boundary line adjustment has been laid out so that any development activities will occur outside of critical areas. These critical areas include wetlands, streams, and steep slopes. There will be no impacts to critical areas or associated buffers resulting from the proposed boundary line adjustments.

CHAPTER 6. SUMMARY

The Gunshy Manor project involves a boundary line adjustment on an existing approximately 124 acre property. The adjustment will relocate three lots so that they are outside of known critical areas. The revised building lots insure that all future development will occur outside of any critical areas or associated buffers on the property. No impacts to critical areas or associated buffers will occur as a result of the proposed boundary line adjustment.

CHAPTER 7. REFERENCES

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Appendix A

Wetland Datasheets

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: TAL-1147 City/County: King Sampling Date: 05-18-12
 Applicant/Owner: Buff Nelson State: Washington Sampling Point: A1
 Investigator(s): DRT Section, Township, Range: NW 1/4 Section 8, T25N, R6E
 Landform (hillslope, terrace, etc.): Slope Local relief (concave, convex, none): Concave Slope (%): 1
 Subregion (LRR): A Lat: 47.6692 Long: -122.0735 Datum: NAD83
 Soil Map Unit Name: Seattle Muck NWI classification: PEM

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)

Are Vegetation , Soil , or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐

Are Vegetation , Soil , or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Hydic Soil Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Remarks:			

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: <u> </u>)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>1</u> (A) Total Number of Dominant Species Across All Strata: <u>1</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100</u> (A/B)
1. <u>Thuja plicata</u>	<u><2</u>		<u>FAC</u>	
2. <u> </u>	<u> </u>		<u> </u>	
3. <u> </u>	<u> </u>		<u> </u>	
4. <u> </u>	<u> </u>		<u> </u>	
<u><2</u> = Total Cover				Prevalence Index worksheet: Total % Cover of: <u> </u> Multiply by: <u> </u> OBL species <u>0</u> x 1 = <u>0</u> FACW species <u>70</u> x 2 = <u>140</u> FAC species <u>2</u> x 3 = <u>6</u> FACU species <u>0</u> x 4 = <u>0</u> UPL species <u>0</u> x 5 = <u>0</u> Column Totals: <u>72</u> (A) <u>146</u> (B) Prevalence Index = B/A = <u>2.0</u>
Sapling/Shrub Stratum (Plot size: <u> </u>)	Absolute % Cover	Dominant Species?	Indicator Status	
1. <u> </u>	<u> </u>		<u> </u>	
2. <u> </u>	<u> </u>		<u> </u>	
3. <u> </u>	<u> </u>		<u> </u>	
4. <u> </u>	<u> </u>		<u> </u>	
5. <u> </u>	<u> </u>		<u> </u>	
<u>0</u> = Total Cover				
Herb Stratum (Plot size: <u> </u>)	Absolute % Cover	Dominant Species?	Indicator Status	Hydrophytic Vegetation Indicators: <input checked="" type="checkbox"/> Dominance Test is >50% <input checked="" type="checkbox"/> Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
1. <u>Alopecurus pratensis</u>	<u>50</u>	<u>Yes</u>	<u>FACW</u>	
2. <u>Ranunculus repens</u>	<u>10</u>		<u>FACW</u>	
3. <u>Juncus effusus</u>	<u>10</u>		<u>FACW</u>	
4. <u> </u>	<u> </u>		<u> </u>	
5. <u> </u>	<u> </u>		<u> </u>	
6. <u> </u>	<u> </u>		<u> </u>	
7. <u> </u>	<u> </u>		<u> </u>	
8. <u> </u>	<u> </u>		<u> </u>	
<u>70</u> = Total Cover				
Woody Vine Stratum (Plot size: <u> </u>)	Absolute % Cover	Dominant Species?	Indicator Status	Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
1. <u> </u>	<u> </u>		<u> </u>	
2. <u> </u>	<u> </u>		<u> </u>	
<u> </u> = Total Cover				
% Bare Ground in Herb Stratum <u>30</u>		% Cover of Biotic Crust <u> </u>		
Remarks:				

SOIL

Sampling Point: A1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)								
Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-6	10YR 2/1	100					SCIL	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.) <input type="checkbox"/> Histosol (A1) <input type="checkbox"/> Histic Epipedon (A2) <input type="checkbox"/> Black Histic (A3) <input type="checkbox"/> Hydrogen Sulfide (A4) <input type="checkbox"/> Stratified Layers (A5) (LRR C) <input checked="" type="checkbox"/> 1 cm Muck (A9) (LRR D) <input checked="" type="checkbox"/> Depleted Below Dark Surface (A11) <input type="checkbox"/> Thick Dark Surface (A12) <input type="checkbox"/> Sandy Mucky Mineral (S1) <input type="checkbox"/> Sandy Gleyed Matrix (S4) <input type="checkbox"/> Sandy Redox (S5) <input type="checkbox"/> Stripped Matrix (S6) <input type="checkbox"/> Loamy Mucky Mineral (F1) <input type="checkbox"/> Loamy Gleyed Matrix (F2) <input type="checkbox"/> Depleted Matrix (F3) <input checked="" type="checkbox"/> Redox Dark Surface (F6) <input type="checkbox"/> Depleted Dark Surface (F7) <input type="checkbox"/> Redox Depressions (F8)	Indicators for Problematic Hydric Soils³: <input type="checkbox"/> 1 cm Muck (A9) (LRR C) <input type="checkbox"/> 2 cm Muck (A10) (LRR B) <input type="checkbox"/> Reduced Vertic (F18) <input type="checkbox"/> Red Parent Material (TF2) <input type="checkbox"/> Other (Explain in Remarks) ³ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.
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Restrictive Layer (if present): Type: <u>Hardpan clay</u> Depth (inches): <u>8</u>	Hydric Soil Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Remarks:	

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one required; check all that apply)			Secondary Indicators (2 or more required)		
<input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Water Marks (B1) (Non riverine) <input type="checkbox"/> Sediment Deposits (B2) (Non riverine) <input type="checkbox"/> Drift Deposits (B3) (Non riverine) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Salt Crust (B11) <input type="checkbox"/> Biotic Crust (B12) <input type="checkbox"/> Aquatic Invertebrates (B13) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input checked="" type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Water Marks (B1) (Riverine) <input type="checkbox"/> Sediment Deposits (B2) (Riverine) <input type="checkbox"/> Drift Deposits (B3) (Riverine) <input checked="" type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input checked="" type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> FAC-Neutral Test (D5)			

Field Observations: Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): <u>-</u> Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): <u>>20</u> Saturation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): <u>>20</u> (includes capillary fringe)	Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:	
Remarks:	

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: TAL-1147 City/County: King Sampling Date: 05-18-12
 Applicant/Owner: Buff Nelson State: Washington Sampling Point: A2
 Investigator(s): DRT Section, Township, Range: NW 1/4 Section 8, T25N, R6E
 Landform (hillslope, terrace, etc.): Slope Local relief (concave, convex, none): Concave Slope (%): 1
 Subregion (LRR): A Lat: 47.6692 Long: -122.0735 Datum: NAD83
 Soil Map Unit Name: Seattle Muck NWI classification: PEM

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)

Are Vegetation , Soil , or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐

Are Vegetation , Soil , or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Hydric Soil Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>		
Remarks: Hydrophytic vegetation is present, but dominated by FAC plants.		

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: <u> </u>)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>3</u> (A) Total Number of Dominant Species Across All Strata: <u>3</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100</u> (A/B)
1. <u>Thuja plicata</u>	<u>5</u>	<u>Yes</u>	<u>FAC</u>	
2. <u>Alnus rubra</u>	<u>10</u>	<u>Yes</u>	<u>FAC</u>	
3. <u> </u>	<u> </u>	<u> </u>	<u> </u>	
4. <u> </u>	<u> </u>	<u> </u>	<u> </u>	
<u> </u> = Total Cover				Prevalence Index worksheet: Total % Cover of: <u> </u> Multiply by: <u> </u> OBL species <u>0</u> x 1 = <u>0</u> FACW species <u>10</u> x 2 = <u>20</u> FAC species <u>105</u> x 3 = <u>315</u> FACU species <u>0</u> x 4 = <u>0</u> UPL species <u>0</u> x 5 = <u>0</u> Column Totals: <u>115</u> (A) <u>335</u> (B) Prevalence Index = B/A = <u>2.9</u>
Sapling/Shrub Stratum (Plot size: <u> </u>)				
1. <u> </u>	<u> </u>	<u> </u>	<u> </u>	
2. <u> </u>	<u> </u>	<u> </u>	<u> </u>	
3. <u> </u>	<u> </u>	<u> </u>	<u> </u>	
4. <u> </u>	<u> </u>	<u> </u>	<u> </u>	
5. <u> </u>	<u> </u>	<u> </u>	<u> </u>	
<u> </u> = Total Cover				
Herb Stratum (Plot size: <u> </u>)				Hydrophytic Vegetation Indicators: <input checked="" type="checkbox"/> Dominance Test is >50% <input checked="" type="checkbox"/> Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
1. <u>Agrostis capillaris</u>	<u>90</u>	<u>Yes</u>	<u>FAC</u>	
2. <u>Ranunculus repens</u>	<u>5</u>	<u> </u>	<u>FACW</u>	
3. <u>Ranunculus acris</u>	<u>5</u>	<u> </u>	<u>FACW</u>	
4. <u> </u>	<u> </u>	<u> </u>	<u> </u>	
5. <u> </u>	<u> </u>	<u> </u>	<u> </u>	
6. <u> </u>	<u> </u>	<u> </u>	<u> </u>	
7. <u> </u>	<u> </u>	<u> </u>	<u> </u>	
8. <u> </u>	<u> </u>	<u> </u>	<u> </u>	
<u> </u> = Total Cover				
Woody Vine Stratum (Plot size: <u> </u>)				Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
1. <u> </u>	<u> </u>	<u> </u>	<u> </u>	
2. <u> </u>	<u> </u>	<u> </u>	<u> </u>	
<u> </u> = Total Cover				
% Bare Ground in Herb Stratum <u> </u>		% Cover of Biotic Crust <u> </u>		
Remarks:				

SOIL

Sampling Point: A2

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)								
Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-3	10YR3/2	100					SCIL	
3-18	10YR 5/3	90	10YR 7/8	10	C	M	SCIL	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.) <input type="checkbox"/> Histosol (A1) <input type="checkbox"/> Histic Epipedon (A2) <input type="checkbox"/> Black Histic (A3) <input type="checkbox"/> Hydrogen Sulfide (A4) <input type="checkbox"/> Stratified Layers (A5) (LRR C) <input type="checkbox"/> 1 cm Muck (A9) (LRR D) <input type="checkbox"/> Depleted Below Dark Surface (A11) <input type="checkbox"/> Thick Dark Surface (A12) <input type="checkbox"/> Sandy Mucky Mineral (S1) <input type="checkbox"/> Sandy Gleyed Matrix (S4)	Indicators for Problematic Hydric Soils³: <input type="checkbox"/> 1 cm Muck (A9) (LRR C) <input type="checkbox"/> 2 cm Muck (A10) (LRR B) <input type="checkbox"/> Reduced Vertic (F18) <input type="checkbox"/> Red Parent Material (TF2) <input type="checkbox"/> Other (Explain in Remarks)
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³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present): Type: _____ Depth (inches): _____	Hydric Soil Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Remarks:	

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one required; check all that apply)</u>				<u>Secondary Indicators (2 or more required)</u>			
<input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Water Marks (B1) (Non riverine) <input type="checkbox"/> Sediment Deposits (B2) (Non riverine) <input type="checkbox"/> Drift Deposits (B3) (Non riverine) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Salt Crust (B11) <input type="checkbox"/> Biotic Crust (B12) <input type="checkbox"/> Aquatic Invertebrates (B13) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Water Marks (B1) (Riverine) <input type="checkbox"/> Sediment Deposits (B2) (Riverine) <input type="checkbox"/> Drift Deposits (B3) (Riverine) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> FAC-Neutral Test (D5)					

Field Observations: Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Saturation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:	
Remarks:	

Appendix B

Wetland Rating Sheets

WETLAND RATING FORM – WESTERN WASHINGTON

Version 2 - Updated July 2006 to increase accuracy and reproducibility among users

Updated Oct 2008 with the new WDFW definitions for priority habitats

Name of wetland (if known): TAL- 1147 Wetland A Date of site visit: May 18, 2012Rated by DRT Trained by Ecology? Yes ☒ No ☐ Date of training 10-05SEC: 8 TOWNSHIP: 25N RANGE: 6E Is S/T/R in Appendix D? Yes ☐ No ☒Map of wetland unit: Figure Estimated size 5,700 sf**SUMMARY OF RATING****Category based on FUNCTIONS provided by wetland****I** **II** **III** **IV** ☒

Category I	Score > 70
Category II	Score 51-69
Category III	Score 30-50
Category IV	Score < 30

Score for Water Quality Functions

4

Score for Hydrologic Functions

4

Score for Habitat Functions

13**TOTAL score for Functions****21****Category based on SPECIAL CHARACTERISTICS of wetland****I** **II** **Does not Apply** ☒**Final Category** (choose the “highest” category from above)**Cat. IV****Summary of basic information about the wetland unit**

Wetland Unit has Special Characteristics		Wetland HGM Class used for Rating	
Estuarine		Depressional	
Natural Heritage Wetland		Riverine	
Bog		Lake-fringe	
Mature Forest		Slope	<input checked="" type="checkbox"/>
Old Growth Forest		Flats	
Coastal Lagoon		Freshwater Tidal	
Interdunal			
None of the above	<input checked="" type="checkbox"/>	Check if unit has multiple HGM classes present	<input type="checkbox"/>

Does the wetland unit being rated meet any of the criteria below?

If you answer YES to any of the questions below you will need to protect the wetland according to the regulations regarding the special characteristics found in the wetland.

Check List for Wetlands That May Need Additional Protection (in addition to the protection recommended for its category)	YES	NO
SP1. <i>Has the wetland unit been documented as a habitat for any Federally listed Threatened or Endangered animal or plant species (T/E species)?</i> For the purposes of this rating system, "documented" means the wetland is on the appropriate state or federal database.		×
SP2. <i>Has the wetland unit been documented as habitat for any State listed Threatened or Endangered animal species?</i> For the purposes of this rating system, "documented" means the wetland is on the appropriate state database. Note: Wetlands with State listed plant species are categorized as Category I Natural Heritage Wetlands (see p. 19 of data form).		×
SP3. <i>Does the wetland unit contain individuals of Priority species listed by the WDFW for the state?</i>		×
SP4. <i>Does the wetland unit have a local significance in addition to its functions?</i> For example, the wetland has been identified in the Shoreline Master Program, the Critical Areas Ordinance, or in a local management plan as having special significance.		×

To complete the next part of the data sheet you will need to determine the Hydrogeomorphic Class of the wetland being rated.

The hydrogeomorphic classification groups wetlands into those that function in similar ways. This simplifies the questions needed to answer how well the wetland functions. The Hydrogeomorphic Class of a wetland can be determined using the key below. See p. 24 for more detailed instructions on classifying wetlands.

Classification of Wetland Units in Western Washington

If the hydrologic criteria listed in each question do not apply to the entire unit being rated, you probably have a unit with multiple HGM classes. In this case, identify which hydrologic criteria in questions 1-7 apply, and go to Question 8.

1. Are the water levels in the entire unit usually controlled by tides (i.e. except during floods)?
× NO go to 2 YES the wetland class is **Tidal Fringe**

If yes, is the salinity of the water during periods of annual low flow below 0.5 ppt (parts per thousand)? **YES – Freshwater Tidal Fringe** **NO – Saltwater Tidal Fringe (Estuarine)**

*If your wetland can be classified as a Freshwater Tidal Fringe use the forms for **Riverine** wetlands. If it is Saltwater Tidal Fringe it is rated as an **Estuarine** wetland.* Wetlands that were called estuarine in the first and second editions of the rating system are called Salt Water Tidal Fringe in the Hydrogeomorphic Classification. Estuarine wetlands were categorized separately in the earlier editions, and this separation is being kept in this revision. To maintain consistency between editions, the term “Estuarine” wetland is kept. Please note, however, that the characteristics that define Category I and II estuarine wetlands have changed (see p.).

2. The entire wetland unit is flat and precipitation is the only source (>90%) of water to it.
Groundwater and surface water runoff are NOT sources of water to the unit.

× NO go to 3 YES The wetland class is **Flats**

If your wetland can be classified as a “Flats” wetland, use the form for **Depressional** wetlands.

3. Does the entire wetland unit **meet both** of the following criteria?

___ The vegetated part of the wetland is on the shores of a body of permanent open water (without any vegetation on the surface) at least 20 acres (8 ha) in size;

___ At least 30% of the open water area is deeper than 6.6 ft (2 m)?

× NO go to 4 YES – The wetland class is **Lake-fringe (Lacustrine Fringe)**

4. Does the entire wetland unit **meet all** of the following criteria?

___ × The wetland is on a slope (*slope can be very gradual*),

___ × The water flows through the wetland in one direction (unidirectional) and usually comes from seeps. It may flow subsurface, as sheetflow, or in a swale without distinct banks.

___ × The water leaves the wetland **without being impounded**?

NOTE: *Surface water does not pond in these type of wetlands except occasionally in very small and shallow depressions or behind hummocks (depressions are usually <3ft diameter and less than 1 foot deep).*

NO - go to 5 × YES – The wetland class is **Slope**

5. Does the entire wetland unit *meet all* of the following criteria?

_____ The unit is in a valley, or stream channel, where it gets inundated by overbank flooding from that stream or river

_____ The overbank flooding occurs at least once every two years.

NOTE: The riverine unit can contain depressions that are filled with water when the river is not flooding.

×NO - go to 6 **YES** The wetland class is **Riverine**

6. Is the entire wetland unit in a topographic depression in which water ponds, or is saturated to the surface, at some time during the year. *This means that any outlet, if present, is higher than the interior of the wetland.*

×NO go to 7 **YES** – The wetland class is **Depressional**

7. Is the entire wetland unit located in a very flat area with no obvious depression and no overbank flooding. The unit does not pond surface water more than a few inches. The unit seems to be maintained by high groundwater in the area. The wetland may be ditched, but has no obvious natural outlet.

×NO go to 8 **YES** The wetland class is **Depressional**

8. Your wetland unit seems to be difficult to classify and probably contains several different HGM classes. For example, seeps at the base of a slope may grade into a riverine floodplain, or a small stream within a depressional wetland has a zone of flooding along its sides. GO BACK AND IDENTIFY WHICH OF THE HYDROLOGIC REGIMES DESCRIBED IN QUESTIONS 1-7 APPLY TO DIFFERENT AREAS IN THE UNIT (make a rough sketch to help you decide). Use the following table to identify the appropriate class to use for the rating system if you have several HGM classes present within your wetland. NOTE: Use this table only if the class that is recommended in the second column represents 10% or more of the total area of the wetland unit being rated. If the area of the class listed in column 2 is less than 10% of the unit; classify the wetland using the class that represents more than 90% of the total area.

<i>HGM Classes within the wetland unit being rated</i>	<i>HGM Class to Use in Rating</i>
Slope + Riverine	Riverine
Slope + Depressional	Depressional
Slope + Lake-fringe	Lake-fringe
Depressional + Riverine along stream within boundary	Depressional
Depressional + Lake-fringe	Depressional
Salt Water Tidal Fringe and any other class of freshwater wetland	Treat as ESTUARINE under wetlands with special characteristics

If you are unable still to determine which of the above criteria apply to your wetland, or if you have more than 2 HGM classes within a wetland boundary, classify the wetland as **Depressional** for the rating.

S Slope Wetlands WATER QUALITY FUNCTIONS - Indicators that the wetland unit functions to improve water quality		Points (only 1 score per box)
S	S 1. Does the wetland unit have the <u>potential</u> to improve water quality?	(see p.64)
S	S 1.1 Characteristics of average slope of unit: Slope is 1% or less (<i>a 1% slope has a 1 foot vertical drop in elevation for every 100 ft horizontal distance</i>) points = 3 Slope is 1% - 2% points = 2 Slope is 2% - 5% points = 1 Slope is greater than 5% points = 0	3
S	S 1.2 The soil 2 inches below the surface (or duff layer) is clay or organic (<i>use NRCS definitions</i>) YES = 3 points NO = 0 points	0
S	S 1.3 Characteristics of the vegetation in the wetland that trap sediments and pollutants: <i>Choose the points appropriate for the description that best fits the vegetation in the wetland. Dense vegetation means you have trouble seeing the soil surface (>75% cover), and uncut means not grazed or mowed and plants are higher than 6 inches.</i> Dense, uncut, herbaceous vegetation > 90% of the wetland area points = 6 Dense, uncut, herbaceous vegetation > 1/2 of area points = 3 Dense, woody, vegetation > 1/2 of area points = 2 Dense, uncut, herbaceous vegetation > 1/4 of area points = 1 Does not meet any of the criteria above for vegetation points = 0 Aerial photo or map with vegetation polygons	Figure ____ 1
S	Total for S 1 Add the points in the boxes above	4
S	S 2. Does the wetland unit have the <u>opportunity</u> to improve water quality? Answer YES if you know or believe there are pollutants in groundwater or surface water coming into the wetland that would otherwise reduce water quality in streams, lakes or groundwater downgradient from the wetland. <i>Note which of the following conditions provide the sources of pollutants. A unit may have pollutants coming from several sources, but any single source would qualify as opportunity.</i> — Grazing in the wetland or within 150ft — Untreated stormwater discharges to wetland — Tilled fields, logging, or orchards within 150 feet of wetland — Residential, urban areas, or golf courses are within 150 ft upslope of wetland — Other YES multiplier is 2 NO multiplier is 1	(see p.67) multiplier 1
S	TOTAL - Water Quality Functions Multiply the score from S1 by S2 Add score to table on p. 1	4

Comments The property is no longer being used for grazing. No other potential sources of pollution were identified within 150 feet of this wetland.

S Slope Wetlands HYDROLOGIC FUNCTIONS - Indicators that the wetland unit functions to reduce flooding and stream erosion		Points (only 1 score per box)
	S 3. Does the wetland unit have the <u>potential</u> to reduce flooding and stream erosion?	(see p.68)
S	<p>S 3.1 Characteristics of vegetation that reduce the velocity of surface flows during storms. Choose the points appropriate for the description that best fit conditions in the wetland. (stems of plants should be thick enough (usually > 1/8in), or dense enough, to remain erect during surface flows)</p> <p>Dense, uncut, rigid vegetation covers > 90% of the area of the wetland. points = 6</p> <p>Dense, uncut, rigid vegetation > 1/2 area of wetland points = 3</p> <p>Dense, uncut, rigid vegetation > 1/4 area points = 1</p> <p>More than 1/4 of area is grazed, mowed, tilled or vegetation is not rigid points = 0</p>	0
S	<p>S 3.2 Characteristics of slope wetland that holds back small amounts of flood flows:</p> <p>The slope wetland has small surface depressions that can retain water over at least 10% of its area.</p> <p>YES points = 2</p> <p>NO points = 0</p>	2
S	Add the points in the boxes above	2
S	<p>S 4. Does the wetland have the <u>opportunity</u> to reduce flooding and erosion?</p> <p>Is the wetland in a landscape position where the reduction in water velocity it provides helps protect downstream property and aquatic resources from flooding or excessive and/or erosive flows? Note which of the following conditions apply.</p> <p><input checked="" type="checkbox"/> Wetland has surface runoff that drains to a river or stream that has flooding problems</p> <p><input type="checkbox"/> Other</p> <p>(Answer NO if the major source of water is controlled by a reservoir (e.g. wetland is a seep that is on the downstream side of a dam))</p> <p>YES multiplier is 2 NO multiplier is 1</p>	(see p. 70)
S	<p>TOTAL - Hydrologic Functions Multiply the score from S 3 by S 4</p> <p>Add score to table on p. 1</p>	4

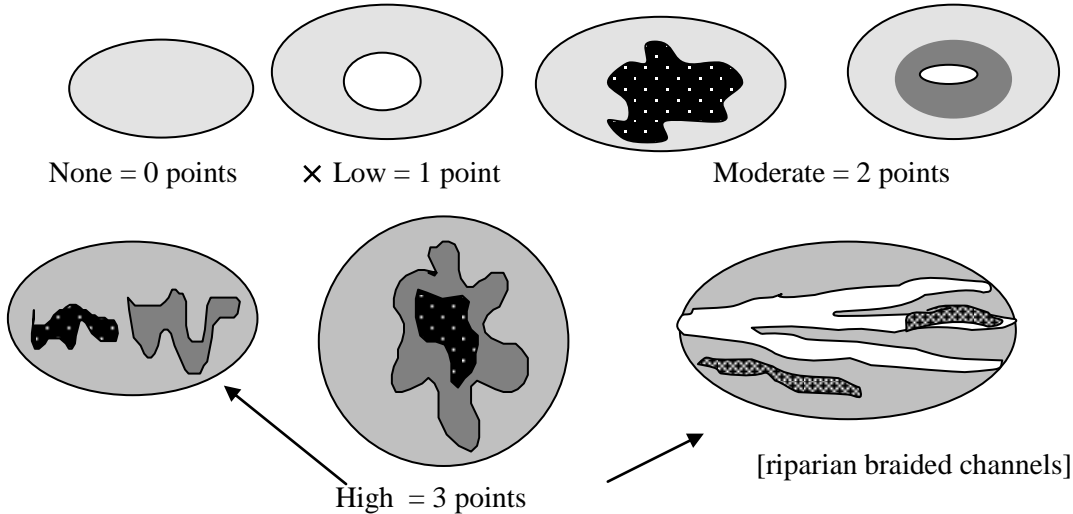
Comments Wetland drains to a ditch that eventually flows to Evans Creek. Evans Creek flows through commercially-developed properties and residential areas that could be damaged by flooding.

These questions apply to wetlands of all HGM classes.		Points (only 1 score per box)											
HABITAT FUNCTIONS - Indicators that unit functions to provide important habitat													
H 1. Does the wetland unit have the <u>potential</u> to provide habitat for many species?													
<p>H 1.1 Vegetation structure (see p. 72) Check the types of vegetation classes present (as defined by Cowardin)- Size threshold for each class is ¼ acre or more than 10% of the area if unit is smaller than 2.5 acres.</p> <p>Aquatic bed × Emergent plants Scrub/shrub (areas where shrubs have >30% cover) Forested (areas where trees have >30% cover)</p> <p>If the unit has a forested class check if: The forested class has 3 out of 5 strata (canopy, sub-canopy, shrubs, herbaceous, moss/ground-cover) that each cover 20% within the forested polygon</p> <p>Add the number of vegetation structures that qualify. If you have:</p> <table border="0"> <tr> <td>4 structures or more</td> <td>points = 4</td> </tr> <tr> <td>3 structures</td> <td>points = 2</td> </tr> <tr> <td>2 structures</td> <td>points = 1</td> </tr> <tr> <td>1 structure</td> <td>points = 0</td> </tr> </table> <p>Map of Cowardin vegetation classes</p>	4 structures or more	points = 4	3 structures	points = 2	2 structures	points = 1	1 structure	points = 0	<p>Figure ____</p> <p>0</p>				
4 structures or more	points = 4												
3 structures	points = 2												
2 structures	points = 1												
1 structure	points = 0												
<p>H 1.2. Hydroperiods (see p. 73) Check the types of water regimes (hydroperiods) present within the wetland. The water regime has to cover more than 10% of the wetland or ¼ acre to count. (see text for descriptions of hydroperiods)</p> <table border="0"> <tr> <td>Permanently flooded or inundated</td> <td>4 or more types present</td> <td>points = 3</td> </tr> <tr> <td>Seasonally flooded or inundated</td> <td>3 types present</td> <td>points = 2</td> </tr> <tr> <td>Occasionally flooded or inundated</td> <td>2 types present</td> <td>point = 1</td> </tr> <tr> <td>× Saturated only</td> <td>1 type present</td> <td>points = 0</td> </tr> </table> <p>× Permanently flowing stream or river in, or adjacent to, the wetland Seasonally flowing stream in, or adjacent to, the wetland</p> <p>Lake-fringe wetland = 2 points Freshwater tidal wetland = 2 points</p> <p>Map of hydroperiods</p>	Permanently flooded or inundated	4 or more types present	points = 3	Seasonally flooded or inundated	3 types present	points = 2	Occasionally flooded or inundated	2 types present	point = 1	× Saturated only	1 type present	points = 0	<p>Figure ____</p> <p>1</p>
Permanently flooded or inundated	4 or more types present	points = 3											
Seasonally flooded or inundated	3 types present	points = 2											
Occasionally flooded or inundated	2 types present	point = 1											
× Saturated only	1 type present	points = 0											
<p>H 1.3. Richness of Plant Species (see p. 75) Count the number of plant species in the wetland that cover at least 10 ft². (different patches of the same species can be combined to meet the size threshold) You do not have to name the species. Do not include Eurasian Milfoil, reed canarygrass, purple loosestrife, Canadian Thistle</p> <p>If you counted:</p> <table border="0"> <tr> <td>> 19 species</td> <td>points = 2</td> </tr> <tr> <td>5 - 19 species</td> <td>points = 1</td> </tr> <tr> <td>< 5 species</td> <td>points = 0</td> </tr> </table> <p>List species below if you want to: Lysichiton americanum, Agrostis tenuis, Poa pratense. Ranunculus repens, Ranunculus sceleratus, Alnus rubra,</p>	> 19 species	points = 2	5 - 19 species	points = 1	< 5 species	points = 0	<p>1</p>						
> 19 species	points = 2												
5 - 19 species	points = 1												
< 5 species	points = 0												

Total for page 2

H 1.4. Interspersion of habitats (see p. 76)

Decide from the diagrams below whether interspersion between Cowardin vegetation classes (described in H 1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, medium, low, or none.



NOTE: If you have four or more classes or three vegetation classes and open water the rating is always "high". Use map of Cowardin vegetation classes

Figure _____

1

H 1.5. Special Habitat Features: (see p. 77)

Check the habitat features that are present in the wetland. The number of checks is the number of points you put into the next column.

Large, downed, woody debris within the wetland (>4in. diameter and 6 ft long).

Standing snags (diameter at the bottom > 4 inches) in the wetland

Undercut banks are present for at least 6.6 ft (2m) and/or overhanging vegetation extends at least 3.3 ft (1m) over a stream (or ditch) in, or contiguous with the unit, for at least 33 ft (10m)

Stable steep banks of fine material that might be used by beaver or muskrat for denning (>30degree slope) OR signs of recent beaver activity are present (*cut shrubs or trees that have not yet turned grey/brown*)

At least ¼ acre of thin-stemmed persistent vegetation or woody branches are present in areas that are permanently or seasonally inundated. (*structures for egg-laying by amphibians*)

× Invasive plants cover less than 25% of the wetland area in each stratum of plants

NOTE: The 20% stated in early printings of the manual on page 78 is an error.

1

H 1. TOTAL Score - potential for providing habitat
Add the scores from H1.1, H1.2, H1.3, H1.4, H1.5

4

Comments

H 2. Does the wetland unit have the opportunity to provide habitat for many species?	
<p>H 2.1 Buffers (<i>see p. 80</i>) <i>Choose the description that best represents condition of buffer of wetland unit. The highest scoring criterion that applies to the wetland is to be used in the rating. See text for definition of "undisturbed."</i></p> <ul style="list-style-type: none"> — 100 m (330ft) of relatively undisturbed vegetated areas, rocky areas, or open water >95% of circumference. No structures are within the undisturbed part of buffer. (relatively undisturbed also means no-grazing, no landscaping, no daily human use) Points = 5 — 100 m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 50% circumference. Points = 4 — 50 m (170ft) of relatively undisturbed vegetated areas, rocky areas, or open water >95% circumference. Points = 4 — 100 m (330ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 25% circumference, . Points = 3 — 50 m (170ft) of relatively undisturbed vegetated areas, rocky areas, or open water for > 50% circumference. Points = 3 <p style="text-align: center;">If buffer does not meet any of the criteria above</p> <ul style="list-style-type: none"> — No paved areas (except paved trails) or buildings within 25 m (80ft) of wetland > 95% circumference. Light to moderate grazing, or lawns are OK. Points = 2 × No paved areas or buildings within 50m of wetland for >50% circumference. Light to moderate grazing, or lawns are OK. Points = 2 — Heavy grazing in buffer. Points = 1 — Vegetated buffers are <2m wide (6.6ft) for more than 95% of the circumference (e.g. tilled fields, paving, basalt bedrock extend to edge of wetland Points = 0. — Buffer does not meet any of the criteria above. Points = 1 <p style="text-align: right;">Aerial photo showing buffers</p>	<p>Figure _____</p> <p style="text-align: center;">2</p>
<p>H 2.2 Corridors and Connections (<i>see p. 81</i>)</p> <p>H 2.2.1 Is the wetland part of a relatively undisturbed and unbroken vegetated corridor (either riparian or upland) that is at least 150 ft wide, has at least 30% cover of shrubs, forest or native undisturbed prairie, that connects to estuaries, other wetlands or undisturbed uplands that are at least 250 acres in size? (<i>dams in riparian corridors, heavily used gravel roads, paved roads, are considered breaks in the corridor</i>).</p> <p style="text-align: center;">YES = 4 points (<i>go to H 2.3</i>) NO = go to H 2.2.2</p> <p>H 2.2.2 Is the wetland part of a relatively undisturbed and unbroken vegetated corridor (either riparian or upland) that is at least 50ft wide, has at least 30% cover of shrubs or forest, and connects to estuaries, other wetlands or undisturbed uplands that are at least 25 acres in size? OR a Lake-fringe wetland, if it does not have an undisturbed corridor as in the question above?</p> <p style="text-align: center;">YES = 2 points (<i>go to H 2.3</i>) NO = H 2.2.3</p> <p>H 2.2.3 Is the wetland:</p> <ul style="list-style-type: none"> within 5 mi (8km) of a brackish or salt water estuary OR within 3 mi of a large field or pasture (>40 acres) OR × within 1 mi of a lake greater than 20 acres? <p style="text-align: center;">×YES = 1 point NO = 0 points</p>	<p style="text-align: center;">1</p>

Total for page 3

<p>H 2.3 <u>Near or adjacent to other priority habitats listed by WDFW (see new and complete descriptions of WDFW priority habitats, and the counties in which they can be found, in the PHS report http://wdfw.wa.gov/hab/phslist.htm)</u></p> <p>Which of the following priority habitats are within 330ft (100m) of the wetland unit? <i>NOTE: the connections do not have to be relatively undisturbed.</i></p> <p><input type="checkbox"/> Aspen Stands: Pure or mixed stands of aspen greater than 0.4 ha (1 acre).</p> <p><input type="checkbox"/> Biodiversity Areas and Corridors: Areas of habitat that are relatively important to various species of native fish and wildlife (<i>full descriptions in WDFW PHS report p. 152</i>).</p> <p><input type="checkbox"/> Herbaceous Balds: Variable size patches of grass and forbs on shallow soils over bedrock.</p> <p><input type="checkbox"/> Old-growth/Mature forests: (Old-growth west of Cascade crest) Stands of at least 2 tree species, forming a multi-layered canopy with occasional small openings; with at least 20 trees/ha (8 trees/acre) > 81 cm (32 in) dbh or > 200 years of age. (<u>Mature forests</u>) Stands with average diameters exceeding 53 cm (21 in) dbh; crown cover may be less than 100%; crown cover may be less than 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth; 80 - 200 years old west of the Cascade crest.</p> <p><input type="checkbox"/> Oregon white Oak: Woodlands Stands of pure oak or oak/conifer associations where canopy coverage of the oak component is important (<i>full descriptions in WDFW PHS report p. 158</i>).</p> <p><input checked="" type="checkbox"/> Riparian: The area adjacent to aquatic systems with flowing water that contains elements of both aquatic and terrestrial ecosystems which mutually influence each other.</p> <p><input type="checkbox"/> Westside Prairies: Herbaceous, non-forested plant communities that can either take the form of a dry prairie or a wet prairie (<i>full descriptions in WDFW PHS report p. 161</i>).</p> <p><input checked="" type="checkbox"/> Instream: The combination of physical, biological, and chemical processes and conditions that interact to provide functional life history requirements for instream fish and wildlife resources.</p> <p><input type="checkbox"/> Nearshore: Relatively undisturbed nearshore habitats. These include Coastal Nearshore, Open Coast Nearshore, and Puget Sound Nearshore. (<i>full descriptions of habitats and the definition of relatively undisturbed are in WDFW report: pp. 167-169 and glossary in Appendix A</i>).</p> <p>Caves: A naturally occurring cavity, recess, void, or system of interconnected passages under the earth in soils, rock, ice, or other geological formations and is large enough to contain a human.</p> <p><input type="checkbox"/> Cliffs: Greater than 7.6 m (25 ft) high and occurring below 5000 ft.</p> <p><input type="checkbox"/> Talus: Homogenous areas of rock rubble ranging in average size 0.15 - 2.0 m (0.5 - 6.5 ft), composed of basalt, andesite, and/or sedimentary rock, including riprap slides and mine tailings. May be associated with cliffs.</p> <p>Snags and Logs: Trees are considered snags if they are dead or dying and exhibit sufficient decay characteristics to enable cavity excavation/use by wildlife. Priority snags have a diameter at breast height of > 51 cm (20 in) in western Washington and are > 2 m (6.5 ft) in height. Priority logs are > 30 cm (12 in) in diameter at the largest end, and > 6 m (20 ft) long.</p> <p style="padding-left: 40px;">If wetland has 3 or more priority habitats = 4 points</p> <p style="padding-left: 40px;">If wetland has 2 priority habitats = 3 points</p> <p style="padding-left: 40px;">If wetland has 1 priority habitat = 1 point No habitats = 0 points</p> <p><i>Note: All vegetated wetlands are by definition a priority habitat but are not included in this list. Nearby wetlands are addressed in question H 2.4)</i></p>	<p>3</p>
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<p>H 2.4 Wetland Landscape (<i>choose the one description of the landscape around the wetland that best fits</i>) (<i>see p. 84</i>)</p> <p>There are at least 3 other wetlands within ½ mile, and the connections between them are relatively undisturbed (light grazing between wetlands OK, as is lake shore with some boating, but connections should NOT be bisected by paved roads, fill, fields, or other development. points = 5</p> <p>The wetland is Lake-fringe on a lake with little disturbance and there are 3 other lake-fringe wetlands within ½ mile points = 5</p> <p>There are at least 3 other wetlands within ½ mile, BUT the connections between them are disturbed points = 3</p> <p>The wetland is Lake-fringe on a lake with disturbance and there are 3 other lake-fringe wetland within ½ mile points = 3</p> <p>There is at least 1 wetland within ½ mile. points = 2</p> <p>There are no wetlands within ½ mile. points = 0</p>	3
<p>H 2. TOTAL Score - opportunity for providing habitat <i>Add the scores from H2.1, H2.2, H2.3, H2.4</i></p>	9
<p>TOTAL for H 1 from page 14</p>	4
<p>Total Score for Habitat Functions – add the points for H 1, H 2 and record the result on p. 1</p>	13

CATEGORIZATION BASED ON SPECIAL CHARACTERISTICS

Please determine if the wetland meets the attributes described below and circle the appropriate answers and Category.

Wetland Type	Category
<p><i>Check off any criteria that apply to the wetland. Circle the Category when the appropriate criteria are met.</i></p> <p>SC 1.0 Estuarine wetlands (see p. 86)</p> <p>Does the wetland unit meet the following criteria for Estuarine wetlands?</p> <ul style="list-style-type: none"> — The dominant water regime is tidal, — Vegetated, and — With a salinity greater than 0.5 ppt. <p>YES Go to SC 1.1 NO <u>X</u></p>	
<p>SC 1.1 Is the wetland unit within a National Wildlife Refuge, National Park, National Estuary Reserve, Natural Area Preserve, State Park or Educational, Environmental, or Scientific Reserve designated under WAC 332-30-151?</p> <p>YES Category I NO go to SC 1.2</p>	Cat. I
<p>SC 1.2 Is the wetland unit at least 1 acre in size and meets at least two of the following three conditions? YES Category I NO Category II</p> <ul style="list-style-type: none"> — The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing, and has less than 10% cover of non-native plant species. If the non-native <i>Spartina</i> spp. are the only species that cover more than 10% of the wetland, then the wetland should be given a dual rating (I/II). The area of <i>Spartina</i> would be rated a Category II while the relatively undisturbed upper marsh with native species would be a Category I. Do not, however, exclude the area of <i>Spartina</i> in determining the size threshold of 1 acre. — At least ¾ of the landward edge of the wetland has a 100 ft buffer of shrub, forest, or un-grazed or un-mowed grassland. — The wetland has at least 2 of the following features: tidal channels, depressions with open water, or contiguous freshwater wetlands. 	Cat. I Cat. II Dual rating I/II

<p>SC 2.0 Natural Heritage Wetlands (<i>see p. 87</i>) Natural Heritage wetlands have been identified by the Washington Natural Heritage Program/DNR as either high quality undisturbed wetlands or wetlands that support state Threatened, Endangered, or Sensitive plant species.</p> <p>SC 2.1 Is the wetland unit being rated in a Section/Township/Range that contains a Natural Heritage wetland? (<i>this question is used to screen out most sites before you need to contact WNHP/DNR</i>) S/T/R information from Appendix D or accessed from WNHP/DNR web site</p> <p>YES _____ contact WNHP/DNR (see p. 79) and go to SC 2.2 NO <u> X </u></p> <p>SC 2.2 Has DNR identified the wetland as a high quality undisturbed wetland or as or as a site with state threatened or endangered plant species? YES Category I NO <u> X </u> not a Heritage Wetland</p>	<p>Cat. I</p>
<p>SC 3.0 Bogs (<i>see p. 87</i>) Does the wetland unit (or any part of the unit) meet both the criteria for soils and vegetation in bogs? <i>Use the key below to identify if the wetland is a bog. If you answer yes you will still need to rate the wetland based on its functions.</i></p> <ol style="list-style-type: none"> 1. Does the unit have organic soil horizons (i.e. layers of organic soil), either peats or mucks, that compose 16 inches or more of the first 32 inches of the soil profile? (See Appendix B for a field key to identify organic soils)? Yes - go to Q. 3 <u> X </u> No - go to Q. 2 2. Does the unit have organic soils, either peats or mucks that are less than 16 inches deep over bedrock, or an impermeable hardpan such as clay or volcanic ash, or that are floating on a lake or pond? Yes - go to Q. 3 <u> X </u> No - Is not a bog for purpose of rating 3. Does the unit have more than 70% cover of mosses at ground level, AND other plants, if present, consist of the “bog” species listed in Table 3 as a significant component of the vegetation (more than 30% of the total shrub and herbaceous cover consists of species in Table 3)? Yes Is a bog for purpose of rating <u> X </u> No - go to Q. 4 NOTE: If you are uncertain about the extent of mosses in the understory you may substitute that criterion by measuring the pH of the water that seeps into a hole dug at least 16” deep. If the pH is less than 5.0 and the “bog” plant species in Table 3 are present, the wetland is a bog. <ol style="list-style-type: none"> 1. Is the unit forested (> 30% cover) with sitka spruce, subalpine fir, western red cedar, western hemlock, lodgepole pine, quaking aspen, Englemann’s spruce, or western white pine, WITH any of the species (or combination of species) on the bog species plant list in Table 3 as a significant component of the ground cover (> 30% coverage of the total shrub/herbaceous cover)? 2. YES Category I No <u> X </u> Is not a bog for purpose of rating 	<p>Cat. I</p>

<p>SC 4.0 Forested Wetlands (<i>see p. 90</i>)</p> <p>Does the wetland unit have at least 1 acre of forest that meet one of these criteria for the Department of Fish and Wildlife's forests as priority habitats? <i>If you answer yes you will still need to rate the wetland based on its functions.</i></p> <ul style="list-style-type: none"> — Old-growth forests: (west of Cascade crest) Stands of at least two tree species, forming a multi-layered canopy with occasional small openings; with at least 8 trees/acre (20 trees/hectare) that are at least 200 years of age OR have a diameter at breast height (dbh) of 32 inches (81 cm) or more. <p>NOTE: The criterion for dbh is based on measurements for upland forests. Two-hundred year old trees in wetlands will often have a smaller dbh because their growth rates are often slower. The DFW criterion is and "OR" so old-growth forests do not necessarily have to have trees of this diameter.</p> <ul style="list-style-type: none"> — Mature forests: (west of the Cascade Crest) Stands where the largest trees are 80 200 years old OR have average diameters (dbh) exceeding 21 inches (53cm); crown cover may be less than 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth. <p>YES = Category I NO <input checked="" type="checkbox"/> not a forested wetland with special characteristics</p>	<p>Cat. I</p>
<p>SC 5.0 Wetlands in Coastal Lagoons (<i>see p. 91</i>)</p> <p>Does the wetland meet all of the following criteria of a wetland in a coastal lagoon?</p> <ul style="list-style-type: none"> — The wetland lies in a depression adjacent to marine waters that is wholly or partially separated from marine waters by sandbanks, gravel banks, shingle, or, less frequently, rocks — The lagoon in which the wetland is located contains surface water that is saline or brackish (> 0.5 ppt) during most of the year in at least a portion of the lagoon (<i>needs to be measured near the bottom</i>) <p>YES Go to SC 5.1 NO <input checked="" type="checkbox"/> not a wetland in a coastal lagoon</p> <p>SC 5.1 Does the wetland meets all of the following three conditions?</p> <ul style="list-style-type: none"> — The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing), and has less than 20% cover of invasive plant species (see list of invasive species on p. 74). — At least ¾ of the landward edge of the wetland has a 100 ft buffer of shrub, forest, or un-grazed or un-mowed grassland. — The wetland is larger than 1/10 acre (4350 square feet) <p>YES Category I NO Category II</p>	<p>Cat. I</p> <p>Cat. II</p>

<p>SC 6.0 Interdunal Wetlands (<i>see p. 93</i>)</p> <p>Is the wetland unit west of the 1889 line (also called the Western Boundary of Upland Ownership or WBUO)?</p> <p>YES - go to SC 6.1 NO <u>X</u> not an interdunal wetland for rating</p> <p><i>If you answer yes you will still need to rate the wetland based on its functions.</i></p> <p>In practical terms that means the following geographic areas:</p> <ul style="list-style-type: none"> • Long Beach Peninsula- lands west of SR 103 • Grayland-Westport- lands west of SR 105 • Ocean Shores-Copalis- lands west of SR 115 and SR 109 <p>SC 6.1 Is the wetland one acre or larger, or is it in a mosaic of wetlands that is once acre or larger?</p> <p>YES Category II NO go to SC 6.2</p> <p>SC 6.2 Is the unit between 0.1 and 1 acre, or is it in a mosaic of wetlands that is between 0.1 and 1 acre?</p> <p>YES Category III</p>	<p>Cat. II</p> <p>Cat. III</p>
<p>Category of wetland based on Special Characteristics</p> <p><i>Choose the “highest” rating if wetland falls into several categories, and record on p. 1.</i></p> <p>If you answered NO for all types enter “Not Applicable” on p.1</p>	<p>NA</p>